

Serial No.: 09/649,461

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61. (New) The method of claim 14 wherein receiving a plurality of mobile call signaling messages at a telecommunications network element includes receiving a plurality of mobile call signaling messages at a signal transfer point and routing the mobile call signaling messages to their intended destinations.
 62. (New) The method of claim 26 wherein receiving a plurality of mobile call signaling messages at a telecommunications network element includes receiving a plurality of mobile call signaling messages at a signal transfer point and routing the mobile call signaling messages to their intended destinations.
 63. (New) The system of claim 57 wherein the telecommunications network signaling node comprises a signal transfer point for routing the mobile call signaling messages to their intended destinations.

REMARKS

Status Summary

This Amendment is response to the Official Action mailed on October 18, 2002. In this Amendment, claims 37, 38, 50, and 51 are cancelled. Claims 60-63 are added. Therefore, upon entry of this Amendment, claims 1-36, 39-49, and 52-63 will be pending.

Clarifying Amendments to Specification and Claims

Clarifying amendments are made to the specification and claims to improve their form. These clarifying amendments do not add any new matter to the application.

Amendments to the Drawings

Figure 4B is proposed to be amended to correct a typographical error. The Examiner's approval of the proposed amendment to Figure 4B is respectively requested.

Claim Rejections 35 U.S.C. § 102

Claims 1-32 and 34-59 were rejected under 35 U.S.C. § 102(e) as anticipated by German Patent Publication No. De 198 05 261 A1 to Jung (hereinafter, "Jung"). This rejection is respectfully traversed.

As a preliminary matter, Applicants wish to clarify that Jung does not qualify as a reference under 35 U.S.C. § 102(e) because it does not have an earlier U.S. application filing date than the present application. Therefore, for this reason alone, the rejection should be withdrawn. Assuming for the sake of argument that Jung qualifies as a reference under another section of 35 U.S.C. § 102, the rejection should still be withdrawn because Jung fails to disclose all of the elements of the claimed invention, as will be explained in detail below.

The present invention, for example as claimed in independent claims 1, 14, 26, 34, 45, and 57 includes methods and systems for receiving mobile call signaling messages at a telecommunications network element, such as an STP, an HLR, or a VLR, and for screening, at the telecommunications network element, mobile call signaling messages that relate to a change in location of the mobile subscriber. Performing the message screening and receiving operations at a telecommunications network element removes the need for additional nodes in the network, such as external monitoring platforms. In addition, the fact that messages that relate to a change in location of a mobile subscriber are screened reduces the amount of processing required to correlate the messages and generate an SMS message intended for the mobile subscriber.

There is no disclosure in Jung of a telecommunications network element that receives mobile call signaling messages and screens mobile call signaling messages that relate to a change in location of a mobile subscriber. Jung discloses a method for detecting an international roaming relationship. Rather than receiving messages at a telecommunications network element, Jung teaches that mobile call signaling messages are received at a protocol monitors 18 and 19 illustrated in Figure 2. Jung

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explicitly states that the messages are not received at a telecommunications network element. For example, on page 3 of the English translation of Jung, it is stated:

No changes of mobile telecommunications network elements (VLR, HLR, MSC) are necessary.

Thus, based on this passage, Jung expressly teaches away from receiving a plurality of mobile call signaling messages at a telecommunications network element as claimed in the independent claims of the present application.

Even assuming for the sake of argument that Jung could be construed to disclose receiving a plurality of mobile call signaling messages at a telecommunications network element, there is no disclosure of screening call signaling messages relating to a change in location of a mobile subscriber, not to mention performing such screening operations at a telecommunications network element. In contrast to screening selected messages, Jung states on page 4 of the English translation:

Protocol recording devices 18, 19 are used which monitor all transitions from the mobile telecommunications network into the international telecommunications network 17 having CCS 7 signaling. (Emphasis added.)

Thus, rather than screening specific messages that relate to a change in location of a mobile subscriber, Jung teaches that protocol monitors 18 and 19 capture all SS7 messages that enter international network 17. Capturing all messages is not the same as screening messages and results in increased processing load on downstream elements such as computer 21.

In contrast to Jung, the telecommunications network element claimed in the independent claims of the present application screens selected messages that relate to a change in location of a mobile subscriber so that subsequent processing and memory requirements for correlating the messages are reduced. Thus, because Jung fails to disclose a telecommunications network element that receives mobile call signaling messages and screens the mobile call signaling messages that relate to a

change in location of a mobile subscriber, it is respectfully requested that the rejection of claims 1-32 and 34-59 as anticipated by Jung be withdrawn.

Claim Rejections 35 U.S.C. § 103

Claim 33 was rejected unpatentable over Jung in view of European Patent Publication No. EP 0 710 043 A1 to Brown (hereinafter, "Brown"). This rejection is respectfully traversed.

Claim 33 depends from claim 26. Claim 26 includes receiving a plurality of mobile call signaling messages at a telecommunications network element and screening the mobile call signaling messages at the telecommunications network element that relate to a change in location of a mobile subscriber. As stated above, Jung fails to teach or even remotely suggest such a system. In fact, Jung explicitly states that the message processing operations disclosed therein for detecting an international roaming relationship are not performed at a telecommunications network element (See page 3 of English translation of Jung).

Brown likewise fails to teach or suggest a method by which mobile call signaling messages are received by a telecommunications network element and messages relating to a change in location of a mobile subscriber are screened at the telecommunications network element. Brown discloses a method for deriving location information of a mobile subscriber. Like Jung, Brown discloses that a computer 42, which is external to the mobile communications network, monitors call signaling messages. Thus, because neither Brown nor Jung, when taken individually or when combined, teaches or suggests the claimed invention, it is respectfully submitted that the rejection of claim 33 should be withdrawn.

New Claims

New claims 60-63 are proposed to be added. Support for the new claims is found, for example, in Figure 1 of the present application.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Pursuant to 37 C.F.R. § 1.121, attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

CONCLUSION

In light of the above amendments and remarks, it is respectfully submitted that the present application is now in proper condition for allowance, and such action is earnestly solicited.

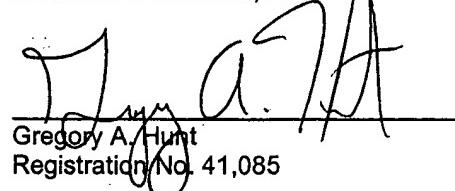
If any small matter should remain outstanding after the Patent Examiner has had an opportunity to review the above Remarks, the Patent Examiner is respectfully requested to telephone the undersigned patent attorney in order to resolve these matters and avoid the issuance of another Official Action.

DEPOSIT ACCOUNT

The Commissioner is hereby authorized to charge any fees associated with the filing of this correspondence to Deposit Account No. 50-0426.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The paragraph beginning at page 1, line 20, has been amended as follows:

-In mobile communications networks, information regarding mobile subscribers are stored in databases, referred to as home location registers (HLRs) and visitor location registers (VLRs). HLRs [permanently] store information about subscribers that belong to the same network [that owns] as the HLR. VLRs temporarily store information about subscribers who are currently "roaming" in the area serviced by that VLR. The VLR may belong to the subscriber's home network or to a foreign network. The HLR and VLR store information needed to correctly route voice calls or data communications to the mobile subscriber. This may include international mobile station identification (IMSI), mobile identification number (MIN), mobile directory number (MDN), and mobile station international ISDN number (MSISDN), as well as the IDs of the VLR and MSC with which the subscriber is currently associated. When a mobile subscriber travels from an area controlled by one VLR or MSC to an area controlled by a different VLR or MSC, a series of messages, referred to as mobile application part (MAP) messages, are exchanged to update contact information for the mobile subscriber in the VLR and HLR. In some instances, it may be desirable for the home network service provider to send a message to [their mobile] the provider's subscribers who are roaming in a foreign network[,] or to a database in response to a change in location of the subscriber. It may also be desirable for the home network service provider to send a message to a foreign subscriber (i.e., a subscriber from a different network provider) who is roaming within the network. Examples of situations in which it may be desirable to send a message to a mobile subscriber in response to a change in location of the subscriber are:

- Sending a greeting or "welcome" message to the roaming subscriber;
- Sending travel information, such as hotels, restaurants, etc. in the area in which the subscriber is roaming;

- Sending advertising information regarding services available in the area; and
- any other type of message that may be of interest to the roaming subscriber.--

The paragraph beginning at page 17, line 5, has been amended as follows:

--Figure 4B illustrated exemplary steps that may be performed by STP 100 and MPP 103 when MAP screening process 328 is external to STP 100. If MAP screening process 328 is not integrated with STP 100 and is instead integrated with MPP 102, the process described above will be the same with the exception that in step **ST7**, SCCP GWS process 326 will be responsible for sending the message directly to copy function 329 based on parameters in the SCCP portion of the message, which may include CdPA and CgPA SSNs or OPC/DPC. In step **ST8**, if the message is screened by SCCP GWS, the message is copied to MPP 102 as described above and the original message is routed to its destination unchanged. In this case, SCCP GWS is configured to copy screened messages rather than discarding them. Once MPP 102 receives the copied message, it passes the message to MAP screening function 328. In steps **ST9** and **ST10**, MAP screening is performed as described above. In step **ST11**, if the result of MAP [screenings] screening is that the message is one of the targeted messages (e.g. MAP_UPDATE_LOCATION_REQUEST), the steps detailed below are followed for correlation and generation of a short message. In step **ST12**, the message is not a targeted message, the copy is discarded by MPP 102 and processing will stop for that message.--

The paragraph beginning at page 23, line 6, has been amended as follows:

--Referring back to Figure 1, upon receipt of the change in location indication message, the short message service center generates a short message containing a welcome message, or other message as determined by the operator. The SMSC then forwards this message to GMSC 106. The protocol between SMSC 104 and GMSC 106 is specified by the PLMN. Alternatively, SMSC 104 may forward the

message back to MPP 102 which then forwards the message to STP 100. STP 100 then forwards the short message to gateway mobile switching center 106. In either case, once gateway mobile switching center 106 receives the short message, it sends a MAP_Forward_Short_Message, containing the welcome message (or other message), to VMSC 110, which then sends a short message to roaming subscriber 108 via the base station network not shown in Figure 1.--

IN THE CLAIMS:

Claims 37, 38, 50, and 51 have been cancelled.

The claims have been amended as follows:

1. (Amended) A method for automatically generating and sending a [Short Message Service]short message service (SMS) message to a subscriber in a mobile communications network in response to a change in [the] location of the subscriber, the method comprising:
 - (a) receiving, at a telecommunications network element, a plurality of mobile call signaling messages[associated with a subscriber that has changed location and roamed away from or outside of the geographic area serviced by the subscriber's home location register (HLR)];
 - (b) screening, at the telecommunications network element, mobile call signaling messages that relate to a change in location of a mobile subscriber;

[(b)](c)correlating the screened mobile call signaling messages based on at least one parameter in the mobile call signaling messages;

[(c)](d)generating a change in location indication message based on parameters extracted from the correlated mobile call signaling messages;

[(d)](e)sending the change in location indication message to a short message service center (SMSC);

- [(e)][(f) in response to receiving the change in location indication message by
SMSC, generating an SMS message intended for the mobile
subscriber; and
- [(f)][(g) sending the SMS message to the mobile subscriber.
2. (Amended) The method of claim 1 wherein [one of the mobile call signaling
messages is] receiving a plurality of mobile call signaling messages includes
receiving a [Mobile Application Protocol]mobile application part (MAP) [Update
Location Request]update location request message.
 3. (Amended) The method of claim 1 wherein [one of the mobile call signaling
messages is] receiving a plurality of mobile call signaling messages includes
receiving a mobile application part (MAP) [Insert Subscriber Data]insert
subscriber data message.
 4. (Amended) The method of claim 1 wherein [one of the mobile call signaling
messages is] receiving a plurality of mobile call signaling messages includes
receiving a mobile application part (MAP) [Update Location Response]update
location response message.
 5. (Amended) The method of claim 1 wherein [one of the mobile call signaling
message parameters used to generate] generating the change in location
indication message [is] includes generating the change in location indication
message using a [Home Location Register Identifier]home location register
identifier (HLR ID) identifying a home location register (HLR) of the mobile
subscriber.
 6. (Amended) The method of claim 1 wherein [one of the mobile call signaling
message parameters used to generated the] generating the change in location
indication message [is] includes generating a change in location indication
message using a [Visitor Location Register Identifier]visitor location register
identifier (VLR ID) identifying a VLR currently serving the mobile subscriber.
 7. (Amended) The method of claim 1 wherein [one of the mobile call signaling
message parameters used to generate the] generating the change in location

- indication message [is] includes generating a change in location indication message using a [Mobile Identification Number]mobile identification number (MIN), [Mobile Directory Number]mobile directory number (MDN) or [Mobile Subscriber]mobile subscriber ISDN (MSISDN) number.
8. (Amended) The method of claim 1 wherein [one of the mobile call signaling message parameters used to generate the] generating the change in location indication message [is] includes generating a change in location indication message using an [International Mobile Station Identity]international mobile station identity (IMSI) number.
 9. (Amended) The method of claim 1 wherein [one of the mobile call signaling message parameters used to generate the] generating the change in location indication message [is] includes generating a change in location indication message using an MSC ID.
 10. (Amended) The method of claim 1 wherein [one of the mobile call signaling message parameters is a date and time either extracted from one of the mobile call signaling messages or generated by a message processing platform the receives the mobile call signaling messages] generating a change in location indication message includes generating a change in location indication message including a date and a time.
 11. (Amended) The method of claim 1 wherein [the] generating an SMS message [is] includes generating a message welcoming or greeting the subscriber or [any] other type of message that a mobile communications network operator desires to send to a subscriber.
 12. (Amended) The method of claim 1 wherein [the] generating an SMS message includes generating at least one of: an advertisement, a weather report, hotel information, or [any] other information that a mobile communications network operator wishes to send to the subscriber.
 14. (Amended) A method for automatically generating and sending a short message service (SMS) message to a subscriber in a mobile communications

network in response to a change in the location of the subscriber, the method comprising:

- (a) receiving a plurality of mobile call signaling messages [associated with a subscriber that has changed location and roamed away from or outside of the geographic area serviced by the subscriber's Home Location Register (HLR)]at a telecommunications network element;
 - (b) screening, at the telecommunications network element, mobile call signaling messages that relate to a change in locations of a mobile subscriber;
 - [(b)][(c)]correlating the [plurality of] screened mobile call signaling messages;
 - [(c)][(d)]combining parameters extracted from the correlated mobile call signaling messages to generate an SMS message intended for the mobile subscriber; and
 - [(d)][(e)]sending the SMS message to the mobile subscriber.
15. (Amended) The method of claim 14 wherein [one of the mobile call signaling messages is]receiving a plurality of mobile call signaling messages at a telecommunications network element includes receiving a [Mobile Application Protocol]mobile application part (MAP) [Update Location Request]update location request message.
16. (Amended) The method of claim 14 wherein [one of the mobile call signaling messages is]receiving a plurality of mobile call signaling messages at a telecommunications network element includes receiving a mobile application part (MAP) Insert [Subscriber Data]subscriber data message.
17. (Amended) The method of claim 14 wherein [one of the mobile call signaling messages is]receiving a plurality of mobile call signaling messages at a telecommunications network element includes receiving a mobile application part (MAP) [Update Location Response]update location response message.
18. (Amended) The method of claim 14 wherein [one of the mobile call signaling message]combining parameters [used to generate the change in location

- indication message is a Home Location Register Identifier (HLR ID)]extracted from the correlated mobile call signaling messages to generate an SMS message includes using a home location register (HLR) identifier to generate the SMS message.
19. (Amended) The method of claim 14 wherein [one of the mobile call signaling message]combining parameters [used to generate the change in location indication message is a Visitor Location Register Identifier (VLR ID)]extracted from the correlated mobile call signaling messages to generate an SMS message intended for the mobile subscriber includes using a visitor location register (VLR) identifier extracted from the correlated mobile call signaling messages to generate the SMS message.
20. (Amended) The method of claim 14 wherein [one of the mobile call signaling message]combining parameters [used to generate the change in location indication message is a Mobile Identification Number (MIN), Mobile Directory Number (MDN) or Mobile Subscriber ISDN (MSISDN) number]extracted from the correlated mobile call signaling messages to generate an SMS message intended for the mobile subscriber includes using at least one of a mobile identification number (MIN), a mobile directory number (MDN), and a mobile subscriber ISDN (MSISDN) number to generate the SMS message.
21. (Amended) The method of claim 14 wherein [one of the mobile call signaling message]combining parameters [used to generate the change in location indication message is an International Mobile Station Identity (IMSI) number]extracted from the correlated mobile call signaling messages to generate an SMS message intended for the mobile subscriber includes using an international mobile station identity (IMSI) number extracted from the correlated mobile call signaling messages to generate the SMS message.
22. (Amended) The method of claim 14 wherein [one of the mobile call signaling message]combining parameters [used to generate the change in location indication message is an MSC ID]extracted from the correlated mobile call

- signaling messages to generate an SMS message intended for the mobile subscriber includes using an MSC ID extracted from the correlated mobile call signaling messages to generate the SMS message.
23. (Amended) The method of claim 14 wherein [one of the mobile call signaling message] combining parameters [used to generate the change in location indication message is a date and time extracted from one of the mobile call signaling messages or generated by a message processing platform that receives the mobile call signaling messages] extracted from the correlated mobile call signaling messages to generate an SMS message intended for the mobile subscriber includes using a date and a time derived from the mobile call signaling messages to generate the SMS message.
24. (Amended) The method of claim 14 wherein the SMS message is a message welcoming or greeting the subscriber, or [any] other message that a mobile communications network operator desires to send to a subscriber.
26. (Amended) A method for correlating mobile call signaling messages transmitted between a home location register (HLR) and a visitor location register (VLR) in response to a change in location of a subscriber, the method comprising:
- (a) receiving, at a telecommunications network element, a plurality of mobile call signaling messages transmitted between an HLR and a VLR [in response to a change in location of a mobile subscriber];
 - (b) screening, at the telecommunications network element, messages that relate to a change in location of a mobile subscriber;
- [(b)][(c)]correlating the screened mobile call signaling messages based on one or more parameters in the mobile call signaling messages; and
- [(c)][(d)][storing the mobile call signaling messages in]generating mobile call location update records based on the correlated mobile call signaling messages.

27. (Amended) The method of claim 26 wherein correlating the screened mobile call signaling [message]messages based on one or more parameters in the mobile call signaling messages includes correlating the mobile call signaling messages based on a dialogue ID contained in the mobile call signaling messages.
28. (Amended) The method of claim 26 comprising comparing an HLR ID and a VLR ID in each screened mobile call signaling message and determining whether a subscriber is roaming in a foreign network in which the subscriber has not previously registered with a VLR based on the comparison.
29. (Amended) The method of claim [27]28 comprising, in response to determining that the subscriber is roaming in a foreign network in which the subscriber is not previously registered with a VLR, continuing correlation processing for the mobile call signaling messages.
30. (Amended) The method of claim [27]28 comprising, in response to determining that the subscriber is not roaming in a foreign network in which the subscriber is not previously registered with a VLR, stopping correlation processing for the mobile call signaling messages.
34. (Amended) A system for automatically generating and sending a short message service (SMS) message to a subscriber in a mobile communications network in response to a change in the location of the subscriber, the system comprising:
 - (a) a [first network element adapted to receive]telecommunications network element for receiving a plurality of mobile call signaling messages [associated with a subscriber that has changed location and roamed away from or outside of the geographic area serviced by the subscriber's home location register (HLR)]and for screening mobile call signaling messages relating to a change in location of a mobile subscriber;

- (b) a message processing platform operatively associated with the [first network element, the message processing platform being adapted to correlate and examine parameters contained within the mobile call signaling messages and to subsequently generate and send a change in location indication message based on the parameters]telecommunications network element for receiving the screened mobile call signaling messages, for correlating the mobile call signaling messages, and for generating a change in location indication message based on the correlated mobile call signaling messages; and
 - (c) a [Short Message Service Center (SMSC) operatively associated with the message processing platform, the short message service center being adapted to:
 - (i) receive and process the change in location indication message;
 - (ii) generate an SMS message intended for the subscriber; and
 - (iii) send the SMS message to the subscriber]short message service center (SMSC) for receiving the change in location indication message from the message processing platform and for generating an SMS message intended for the mobile subscriber.
35. (Amended) The system of claim 34 wherein the [first]telecommunications network element [is]comprises a signal transfer point (STP).
36. (Amended) The system of claim 34 wherein the [first]telecommunications network element [is]comprises a signaling gateway routing node.
39. (Amended) The system of claim 34 wherein the [first]telecommunications network element [is]comprises a visitor location register (VLR).
40. (Amended) The system of claim 34 wherein the [first]telecommunications network element [is]comprises a home location register (HLR).
41. (Amended) The system of claim 34 wherein the owners or operators of [the subscriber's]an HLR in a home network of the mobile subscriber and the [first]telecommunications network element are not the same.

42. (Amended) The system of claim 34 wherein the message processing platform is contained within the [first]telecommunications network element.
43. (Amended) The system of claim 34 wherein the message processing platform is an external computing workstation [that is communicatively] coupled to the [first]telecommunications network element.
45. (Amended) A system for automatically generating and sending a Short Message Service (SMS) message to a subscriber in a mobile communications network in response to a change in the location of the subscriber, the system comprising:
 - (a) a [first]telecommunications network element [adapted to receive]for receiving a plurality of mobile call signaling messages [associated with a subscriber that has changed location and roamed away from or outside of the geographic area serviced by the subscriber's home location register (HLR)]and for screening mobile call signaling messages that relate to a change in location of a mobile subscriber; and
 - (b) a message processing platform associated with [or coupled to] the [first] network element, the message processing platform being adapted to correlate and examine parameters contained within the mobile call signaling messages and subsequently generate and send a short message service (SMS) message to the subscriber]signaling message routing node for correlating the screened mobile call signaling messages and generating a short message service (SMS) message intended for the mobile subscriber based on the correlated messages.
46. (Amended) The system of claim 45 wherein the [first]telecommunications network element [is]comprises a signal transfer point (STP).
47. (Amended) The system of claim 45 wherein the [first]telecommunications network element [is]comprises a signaling gateway[routing node].

48. (Amended) The system of claim 45 wherein the [first]telecommunications network element [is]comprises a visitor location register (VLR).
49. (Amended) The system of claim 45 wherein the [first]telecommunications network element [is]comprises an HLR.
52. (Amended) The system of claim 51 wherein the owners or operators of [the subscriber's]an HLR in a home network of the mobile subscriber and the [first]telecommunications network element are not the same.
53. (Amended) The system of claim 45 wherein the message processing platform is [integral with and]contained within the [first network element]telecommunications network element.
54. (Amended) The system of claim 45 wherein the message processing platform is an external computing workstation [that is communicatively]coupled to the [first network element]telecommunications network element.
57. (Amended) A system for generating a message in response to a change in location of a mobile subscriber, the system comprising:
 - (a) a telecommunications network signaling node for receiving mobile call signaling messages and [copying]for screening selected mobile application part messages (MAP) transmitted between a home location register and a visitor location register in response to a change in location of a mobile subscriber; and
 - (b) a message processing platform operatively associated with the signaling node for receiving the [copies of the selected]screened MAP messages, correlating the [selected]screened MAP messages, and generating a change in location indication message based on the correlated MAP messages.

The following new claims have been added:

60. (New) The method of claim 1 wherein receiving a plurality of mobile call signaling messages at a telecommunications network element includes

- receiving a plurality of mobile call signaling messages at a signal transfer point and routing the mobile call signaling messages to their intended destinations.
61. (New) The method of claim 14 wherein receiving a plurality of mobile call signaling messages at a telecommunications network element includes receiving a plurality of mobile call signaling messages at a signal transfer point and routing the mobile call signaling messages to their intended destinations.
62. (New) The method of claim 26 wherein receiving a plurality of mobile call signaling messages at a telecommunications network element includes receiving a plurality of mobile call signaling messages at a signal transfer point and routing the mobile call signaling messages to their intended destinations.
63. (New) The system of claim 57 wherein the telecommunications network signaling node comprises a signal transfer point for routing the mobile call signaling messages to their intended destinations.

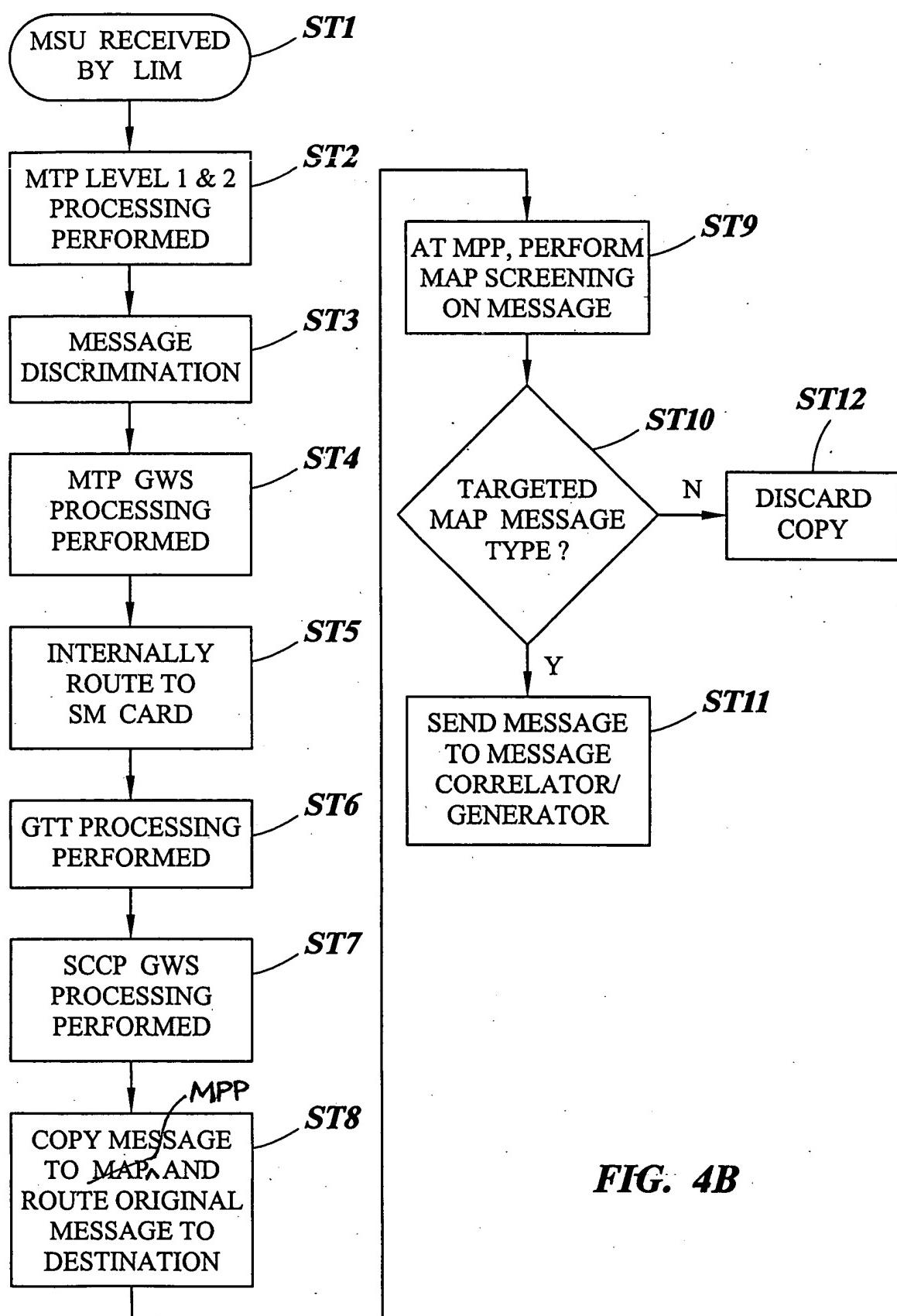


FIG. 4B